Chapter 6 Outline

* Several functions of bones
* To serve as a firm framework for the body
* To protect delicate structures such as the brain and spinal cord
* To serve as levers to produce movement
* To store calcium salts

To produce blood cells

* Bones come in several shapes
* Flat
* Short
* Irregular
* Long — most common, arms and legs (Fig 6-2)
  + - Diaphysis — long narrow shaft
    - Medullary cavity — at center of diaphysis
    - Epiphysis — the irregular ends
* Differences in location and structure
* Compact (Fig. 6-3)
  + - Long bone main shaft
    - Outer layer of other bones
    - Central haversian canal surrounding concentric rings containing bone cells
    - Interlocking perforating canals
* Spongy (Fig. 6-4)
  + - Epiphyses of long bones
    - Center layer of other bones
    - Meshwork of bony plates
    - Filled with red marrow
* Bone marrow
* Red (Fig. 6-2)
  + - End of long bones
    - Center of other bones
    - Manufactures blood cells
* Yellow
  + - In central cavities of long bones

Composed of fat

* Types of bone cells
* Osteoblasts manufacture the matrix
* Osteocytes maintain and repair existing bone matrix

Osteoclasts resorb bone tissue

* Formation of a Long Bone
* Cartilage begins to turn into bone
* Epiphyseal plates develop across bone ends
* Bones continue to lengthen
* Bones stop lengthening

Bone resorption and formation continues

* Distinguishing bone markings
* Projections
  + - Head
    - Process
    - Condyle
    - Crest
    - Spine
* Depressions or holes
  + - Foramen
    - Sinus
    - Fossa

Meatus

* Axial skeleton—80 bones of the head and trunk
* Skull
  + - Cranium
    - Facial bones
    - Infant skull
* Trunk
  + - Vertebral column

Thorax

* Fibrous cartilage (fontanels) allows
* Skull to change shape during childbirth
* Rapid expansion of brain during early development
* Curves of the spine
* Primary curve (concave)
  + - Thoracic
    - Sacral
* Secondary curves (convex)
  + - Cervical
    - Lumbar
* Balance and movement
* Appendicular Skeleton
* Appendicular skeleton—126 bones of the extremities
* Upper division
  + - Shoulder girdle (Fig. 6-15)
      * Clavicle
      * Scapula
    - Upper extremity
      * Humerus   
        (Fig 6-16)
      * Ulna (Fig. 6-17)
      * Radius(Fig. 6-17)
      * Carpals
      * Metacarpals
      * Phalanges
* Lower division
  + - Pelvis
      * Os coxae
      * Ileum
      * Ischium (ischial spine, ischial tuberosity)
      * pubic (pubic symphysis)
      * Acetabulum
    - Lower extremity
      * Femur
      * Patella
      * Tibia
      * Fibula
      * Tarsals
      * Metatarsals
      * Phalanges
* Female pelvis (as compared to male)
* Lighter
* Wider ilia
* Wider pubic arch
* Wider, more rounded opening
* Larger pelvic outlet
* Shorter, less-curved sacrum and coccyx
* Bones undergo significant changes
* Causes
  + - Loss of calcium salts
    - Decrease in protein
    - Reduction in collagen
* Effects
  + - Loss of height
    - Decrease in chest diameter
* Fibrous
* Synarthrosis (immovable)
* Cartilaginous
* Amphiarthrosis (slightly movable)
* Synovial (Fig. 6-29)
* Diarthrosis (freely movable)
* Types of Synovial Joints
* Classified by types of movement
  + - Gliding
    - Hinge
    - Pivot
    - Condyloid
    - Saddle
    - Ball-and-socket
* Movement at Synovial Joints
* Flexion
* Extension
* Abduction
* Adduction
* Circumduction
* Rotation
* Movements characteristic of forearm and ankle
* Supination
* Pronation
* Inversion
* Eversion
* Dorsiflexion
* Plantar flexion
* Medical terms related to the skeleton bones and joints
* Bones: *diaphysis, osseous, periosteum, osteoclast*
  + - *dia-* (through, between)
    - *oss, osse/o* (bone, bone tissue)
    - *oste/o* (bone, bone tissue)
    - *–clast* (break)
* Divisions of the skeleton: *paranasal, parietal, intercostals, supraspinous, infraspinous, metacarpal*
  + - *para-* (near)
    - *pariet/o* (wall)
    - *cost/o* (rib)
    - *supra-* (above, superior)
    - *infra-* (below, inferior)
    - *meta-* (near, beyond)
* The joints: *synarthrosis, amphiarthrosis, abduction, adduction, circumduction*
  + - *arthr/o* (joint, articulation)
    - *amphi-* (on both sides, around, double)
    - *ad-* (toward, added to)
    - *ab-* (away from)

*circum-* (around)